33 Underpinning the Learning Environment: Strategic Decisions for ICT Literacy in Higher Education

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Abstract

Student ICT literacy lies at the heart of the ICT-rich learning environment. The learning environment increasingly offers the student a set of ICT tools and access to large amounts of digitally stored information, at institutional, national and global level. For the student, the abilities not only to confidently use these tools, but to critically evaluate the most effective use to which they can be put, are crucial, and will impact upon the effectiveness of study. Additionally, such generic skills are preparatory both in the lifelong learning context, and in the transition to employment. The strategic address to student ICT literacy is thus an important element of policy-making in higher education institutions. In discussing the response which institutions are making, we will draw upon two sources of evidence, the CITSCAPES Project, which carried out in 2001 a survey of current provision for student ICT literacy throughout the UK, complementing this with a series of case studies illustrating the variety of practice in this area. And second, we will reflect upon developments at the Universities of Glasgow and Gloucestershire, which are very different types of institution, but have both placed strategic priority upon student ICT literacy. Each has approached the delivery and assurance of student ICT literacy in a different manner: Glasgow has over the past seven years developed a compulsory ICT literacy programme for all students, whilst Gloucestershire have developed a set of modules which integrate ICT literacy into the curriculum.

Keywords: ICT Literacy

1. Introduction

Student ICT literacy lies at the heart of the ICT-rich learning environment. The learning environment increasingly offers the student a set of ICT tools (which may or may not be built around a so-called "Virtual Learning Environment"), and access to large amounts of digitally stored information, at institutional, national and global level. For the student, the abilities not only to confidently use these tools, but also to critically evaluate the most effective use to which they can be put, are crucial, and will impact upon the effectiveness of study. Additionally, such generic skills are preparatory both in the lifelong learning context, and in the transition to employment. The strategic address to student ICT literacy is thus an important element of policy-making in higher education institutions.

2. The Evolving Situation in the UK – the Citscapes project

ICT Literacy is a crucial element in the student's ability to study effectively in an information-rich and ICT supported learning environment. The UK Joint Information Systems Committee (JISC) recognised this in its *Circular 4/99* of November 1999, inviting proposals for a project which would *"find out how students' C&IT skills development will affect Higher Education and whether, in light of these different skills, Higher Education Institutions will need to change the nature of their training provision."* The outcome of this call was the CITSCAPES project, which has been running since May 2000, led by the University of Glasgow (other partners are the Universities of Gloucestershire and Stirling, Glasgow Caledonian University, Gloucestershire College of Arts and Technology, Lauder College, Dunfermline, and the Learning Skills Development Agency). The project team carried out detailed surveys of student ICT Literacy provision in higher education, and compiled a series of detailed case studies. The project has now extended its work into the further education sector, covering colleges offering courses to 16-year-olds and over; this work is still under way, and this paper therefore reflects the higher education results. The higher education survey involved three questionnaires, A, focused on strategic and policy issues, B, focused on the character of ICT skills provision across the institution, and C, focused on the characteristics of the actual programmes of delivery of ICT skills. We used the term "C&IT induction" to refer to any process of engendering ICT literacy in students. Note that the terms "ICT" and "C&IT" are synonymous, "C&IT" being used officially in UK higher education in preference to the more widely used "ICT" (in Europe) or "IT" (in the USA).

3. Strategic Recognition

It is clear from our data that student ICT literacy is now becoming recognised as an important issue by most HEIs. Almost two thirds of the HEIs responding to the CITSCAPES survey considered Student C&IT induction "highly important" (Table 1.).

Question A2. What level of priority is given to student C&IT induction?	Number	%
Highly important	56	60
Fairly important	30	32
Not considered as major priority	4	4
Any combination	3	3
Total	93	100.

Table 1. Level of priority given to student C&IT induction

As an additional comment on its response, a pre-1992 university wrote, "Recently assumed much more importance - we are beginning to tackle this whole area more consistently - neglected in the past."

A circumstantial indication of the increasing strategic importance of induction in ICT skills is the seniority of managers admitting to a strategic role for this area who were willing to complete CITSCAPES Questionnaire A (Table 2.).

Status of person responding to Questionnaire A	Number	% of returns	% of respondents to this question
Principal	1	1	1
Vice-principal/pro-vice-chancellor	19	21	22
Director of Information Service/Dean of Faculty	15	17	17
Head of Department (including IT Service)	35	39	41
Service manager or equivalent	12	13	14
Training Officer/Lecturer	4	4	5
Did not complete this question	3	3	
Total	89	100	100

Table 2. Level of person responding to Questionnaire A

Of these persons, 35 out of the 86 who answered the question (40%) ranked at Director of converged service/Dean of Faculty or above. Heads of Computing or IT Services were included in the next group, Heads of Department, which provided another 39 persons (41%). Managers or officers and lecturers only contributed 16 (19%).

Looking at the place of student ICT literacy in the institution's strategic intentions is more difficult, since strategic documents can vary from fantasy lists or public relations exercises through realistic goal-focused plans to lists of current activities with very little future orientation. Such documentation is not always the best guide to what is taking place or may be planned. However, in the context of increasing accountability to stakeholders, policy documentation is a more serious requirement than may have been the case in the past. Over two thirds of institutions responding to Questionnaire A were able to assert that student C&IT induction was incorporated in strategic documents (Table 3.)

Question A3. Is student C&IT induction incorporated in strategic documents?	Number	% of returns	% of those who responded to this question
Yes	64	69	70
No	27	29	30
Did not respond to this question	2	2	
Total	93	100	100

Table 3. Incorporation of student C&IT induction in strategic documents

The details of policy documentation may be more difficult to evaluate, since they may reflect the styles and topical concerns of senior managers, and may focus on problems to be solved, rather than those which may be felt to have already been solved. We did not consider the level of priority accorded to student ICT literacy in strategic plans, or the level within strategic documentation at which reference to it appears.

In terms of the relationship of policy and action, responses to survey question A9 provide institutional perspectives on the current situation (Table 4.). That fewer than half the institutions responding characterise their present situation as stable, underlines the status of student ICT literacy as a live issue in higher education.

Question A9. How could the current position regarding student C&IT induction at your institution be best described?	Number	%
Stable	51	55
Transitional	30	32
Tentative	9	10
Any combination	3	3
Total	93	100

Table 4. Current position regarding student C&IT induction

This table also suggests that action is being taken in respect of this issue in the majority of institutions. We may presume that all institutions characterised by themselves as other than stable are moving towards implementation of student ICT literacy measures (rather than being in the process of dismantling them); and that several (at least) of those who characterise themselves as stable have already implemented such measures, and do not at present wish to change them.

The quotations below from some respondents illustrate the situation. Some institutions have identified a satisfactory approach:

> We are a large research-led university and Information Services do not have the resources to [provide] all u/g students with IT training (e.g. word processing, spreadsheets, databases etc.). We do provide this for staff and taught & research postgraduates. … We provide induction training to u/g and are looking to ECDL as a way of introducing IT training to u/g. (Pre-1992 university)

> What we term "induction" for undergraduates is simply an introductory talk on the facilities available and how to get the best from them, it is not hands-on training. Some academic departments provide the latter on their own initiative. A central hands-on training program is considered a priority for research students and is provided centrally. (Pre-1992 university) is a relatively small institution (c6000 FTE students) and it is also a single-faculty. This simplifies C&IT provision because the range of hardware and software platforms is not great. All students are encouraged to attend the regular induction sessions (throughout the year) and a majority do. Staff can also attend regular sessions for them and we also do one-to-one training for them on request. All backed up by a helpdesk service for students, dedicated small support team for staff, and self-help documentation. (Pre-1992 university)

> The idea of generic C&IT induction is now rather outdated, given the diverse (and often advanced) range of skills many students have on entry. Embedded C&IT induction within general study-skills customised for each subject is the way forward. (Post-1992 university)

> The induction provision stems naturally from the process of planning, validation and operating a course. Key skills are an embedded feature of course provision at this University. (Post-1992 university)

> The Central University Computing Services run a full programme of IT training modules which are available to all staff and students of the University. Anyone can attend; they must have the pre-requisite knowledge. (Pre-1992 university)

> All students at the start of the Academic year are given specific C&IT Induction which is followed by weekly Key Skills Sessions. (Monotechnic institution)

Others are still feeling their way towards addressing the issue:

> The demands of 18 year olds joining the University in this area is continually changing. Much more support is needed for mature/part-time students than the traditional intake. (Post-1992 university)

> The College realises it should be providing C&IT skills training as part of a wider provision including report writing, presentation skills, statistics, study skills etc. i.e. NOT as a separate entity. It has been raised at various committees but no structured way forward has yet been determined. (College of Higher Education)

> We are moving to a more centralised model involving computer-based diagnosis and development of student IT skills, alongside voluntary development/accreditation opportunities. (Post-1992 university)

> A new post, IT Training officer, has recently been filled. The remit includes co-ordination of all student IS training. But no work has started yet, as the initial focus is on putting a staff training programme in place. (Post-1992 university)

> A University wide Group has recently been created to look centrally at the whole issue of C&IT skills training for all University members - staff and students. (Pre-1992 university)

> New division of Learning and Teaching established May 2000 with newly appointed Director. (College of Higher Education)

> At present there is no SYSTEMATIC C&IT induction for students. Library staff and IT support staff provide ad hoc induction, and C&IT issues are referred to in more general library induction sessions. The situation is acknowledged as a priority area. This year, data has been collected on student PC ownership and C&IT competence. It is planned to target future, more systematic, induction through use of this data. (Monotechnic institution)

> Identified as area for potential change in Learning and Teaching Strategy for College, but fraught with difficulty. (College of Higher Education)

4 Nature of Provision

The overview of development of ICT literacy provision suggests a model of piecemeal growth in devolved areas (faculties, departments or services), overlain first by central initiatives and later by consolidation. An example is the University of Glasgow, considered below, where disparate provision developing in a range of departments was

complemented by a centrally funded programme, which then enabled a consolidation of provision by departmental incorporation of the centrally supported structures. Our data supports this model, and suggests that higher education institutions lie somewhere on the "piecemeal growth – central initiative – consolidation" trajectory.

A result of this development would be a multiplicity of providers in each institution, and responses to Question A6 (Table 5.) are consistent with this pattern.

Question A6. Who provides student C&IT Induction?	Number	%
One unit or department	19	20
More than one	72	77
No provision	0	0
Any combination	2	2
Total	93	100

Table 5. Number of providers of student C&IT induction

Very few institutions suggest that student ICT literacy is offered by only one agency. Of the 19 offering this response, 8 are monotechnic institutions, where numbers are smaller and opportunities for diversity in provision limited, 5 are institutions with a limited range of faculties only, and only 6 can be described as comprehensive in their range of provision, and 4 of these could be described as smallish (c.12, 000 students). We should expect then to see in most institutions a more or less complicated picture of to some extent overlapping provision offered by a number of agencies, some central, some devolved.

Question B5 requested a listing of departments involved in student ICT skills provision; the mean number per institution (with 86 responses to this question) was 2.7, with numbers ranging from 0 to 8 (Table 6 and Figure 1.)

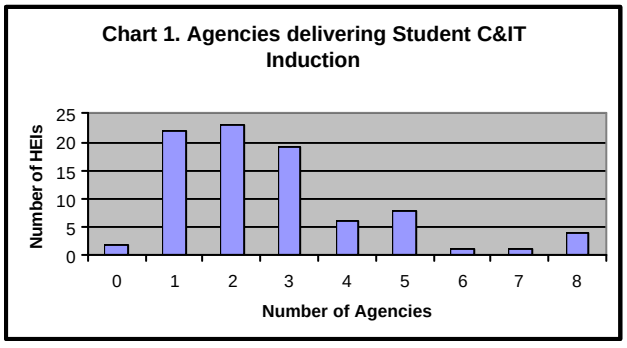

Figure 1: Number of agencies delivering student C&IT induction

Thus we have an average of almost three agencies per institution involved in student ICT literacy provision, and the most likely number is between two and four.

Question B5 Units	HEIs
0	2
1	22
2	23
3	19
4	6
5	8
6	1
7	1
8	4
no response	6

Table 6. Number of agencies delivering student C&IT induction

The names of agencies quoted in response to Question B5 indicates the range of directions from which student ICT skills are being provided (Table 7). Taking central departments, computing and information services have the largest numbers, but by no means dominate the table, with a substantial minority from agencies concerned with student support. Considering provision from academic departments, the range is very wide, with computing departments not being particularly heavily involved.

Question B5	Type of Agency	Number
Central Agencies	Information service	24
	IT/Computing service	28
	Library	13
	Student support	21
	Teaching & Learning	13
	Other	13
	Total central agencies	112
Academic departments	Computing	11
	Other	95
	Total academic departments	106
	Total	218

Table 7. Type of agencies delivering student C&IT induction

We should be careful in interpreting table 7, since some of the central departments quoted are involved in academic course provision, and whilst unspecified numbers of some responses refer to academic departments or faculties, others list those which are known to be involved in delivery of student ICT literacy. Nevertheless, it is clear that there is no obvious direction from which student ICT skills should be expected to come, and academic areas are as involved in delivery as central ones.

If we consider what is being provided (see Table 8.), a picture emerges of a variety of routes through which student ICT skills may be delivered. Although provision by a service department and within academic courses are the most likely routes, stand-alone programmes, student skills programmes or provision through student support programmes are sufficiently well-supported for them to be considered normal routes for delivery.

Question B5.		
Student C&IT induction provision types	No. of HEIs indicating presence of each type	% of total HEIs responding to this question
Stand alone C&IT skills programme	33	39%
C&IT course as part of a student skills programme	36	42%
C&IT skills as part of an academic course	65	76%
C&IT course provided by a service department/unit	63	74%
Element of student special needs & support services	31	36%

Number of responses = 85

Table 8. Types of student C&IT induction provision

In terms of what is offered, there is some variation in emphasis, as indicated by responses to Question C5, requesting goals of student C&IT induction:

i. Support academic work:

To equip students with core C&IT skills that will underpin their course of academic study, enabling them to take full advantage of IT & electronic resources provided by the University. (Post-1992 university, Information Service department)

To provide essential IT skills to enable the student to complete academic study. (Pre-1992 university, IT service)

To provide training to enable students to complete IT tasks required by their academic course. (College of HE, IT service)

A range of basic skills integrated into the respective programme of study and dependent upon student needs, in order to equip students with the skills necessary for their course. (College of HE, Maths/IT dept.)

To enable the students to obtain the competence on the PC to support their studies. (Post-1992 university, Computer Centre)

To provide basic training in IT for students to be able to use the facilities available in order to produce their academic work. (Pre-1992 university, IT Services)

ii. Support study of a particular subject:

To develop basic skills to use and apply (Windows 2000, Internet Explorer, MS Exchange, PowerPoint, FrontPage, Excel and Access) to future business school modules. (Post-1992 university, Business School)

Fill gaps in UG provision, and provide underpinning base for research skills at MA level. (Post-1992 university, postgraduate History course)

iii. Preparation for employment:

ITT Students: To raise C&IT skills of trainee students in line with the Government's standards (Circular 4/98) in order to satisfy QTS. Joint Hons: To provide C&IT skills as part of a Core Skills programme to increase preparedness for a professional working life after graduation. (College of Higher Education)

To develop a range of transferable skills…to prepare students, through the development of an appropriate range of knowledge and skills, for careers in media and communication. (College of HE, Faculty of Media)

To provide students with the necessary tools to function in the current technological situation, also to encourage

communication skills vital for success as a practicing engineer. (Post-1992 university, Faculty of Engineering)

To prepare students with the skills required for a modern workplace. (Post-1992 university, School of Sport)

iv. General benefits to both study and employment.

To equip students with basic IT skills for study and employment. (Post-1992 university, Learning and Teaching Centre)

To develop personal competence in generic skills, and an ability to selectively use software in the classroom/place of work (College of Higher Education, Maths & IT dept.)

v. Focus on particular applications:

To provide taught sessions on range of Microsoft packages for postgraduates - through standard training sessions. To provide self-teach material for undergraduates. (Pre-1992 university, Information Service department)

To ensure students can access the network (e-mail, internet) and can use the main components of the MS Office suite (word, excel, PowerPoint) (Post-1992 university, Business School)

To introduce email and word-processing to all newly enrolled students, (Monotechnic, Learning Resources dept.)

To give basic IT skills in Word, PowerPoint, Excel, Access (Office 2000 packages), file management, scanning. (Monotechnic, Learning Resources Centre)

vi. Focus on an IT qualification:

A pilot scheme to assess the effectiveness of the ECDL as a basic IT skills qualification. (College of Higher Education, Library and Information Services)

vii. Future orientation

To give students the opportunity to discover ways of exploiting the digital technology they can expect to meet in future years. (Monotechnic, Computing Service)

5. Two Case Studies

5.1. University of Glasgow

The University of Glasgow was founded in 1451, when James II, King of Scots, persuaded Pope Nicholas V to issue a bull authorising Bishop Turnbull of Glasgow to set up a university. Modelled on the University of Bologna, Glasgow was Scotland's second university, and is one of the four "ancient" Scottish universities (the others are St. Andrew's, Aberdeen and Edinburgh). The university was based first in the Cathedral, then in buildings not far from it, and finally moved to its present campus in the West End of the city in 1870. There are two sub-campuses in the north-western suburb of Bearsden, housing the Education and Veterinary Medicine Faculties, and the university also has a stake in the Crichton Campus, Dumfries, a regional higher education facility for the South West of Scotland. It is the largest university in Scotland, with, in the 2000-2001 session, 16,847 full time students (14,794 undergraduate, 2,053 postgraduate) and a further 2,459 part-time students (507 undergraduate, 1,952 postgraduate). There are nine faculties: Arts, Divinity, Education, Engineering, Law & Financial Studies, Medicine, Science, Social Sciences, and Veterinary Medicine. 57.5% of students are women, 11% of students are from outwith the UK, and 12.5% of undergraduates are mature students (i.e. over 21 when they began their studies). Glasgow has established itself over many years as a university serving the West of Scotland, but it has also developed, again over a period of centuries, an international reputation which draws students from throughout the world.

As an old university, Glasgow possesses a traditional structure, with a Senate supervising academic matters and a Court administrative ones. The University Principal is influential in both bodies, but normally requires the support of faculties in carrying matters through the Senate (although on occasions of urgency opposition can be overridden). However, because of his role in resource distribution and liaison with the Funding Council, his role as determinator of policy has grown over recent decades.

The University made a clear commitment to supporting an IT-rich student learning environment in its IT Strategy, which was launched in 1992, and presented a clear vision of the well-supported IT-empowered student of the 1990s. The strategy envisioned measures to bring this to reality, including login IDs for all students, large numbers of PCs available in the University library building, fast networking available to all, the "Common Student Computing Environment" (a set of generic applications available across the whole university network, and a "University-wide Introductory Course in IT". The University is now in the process of reformulating its strategy in a number of areas, and the Information Strategy which is emerging will maintain the commitment to an IT-rich learning environment. Consideration is now being given to a Virtual Learning Environment (VLE) to be adopted across the university, as well as the use of more advanced digital facilities. However, student IT literacy is still seen as lying at the core of provision for students. The IT Baseline has evolved over time, and will continue to do so, in order to best prepare students for IT-rich learning experiences. Work with staff parallels these developments, with the involvement of staff in the IT-rich learning environment seen as a complementary objective to that of effective student IT empowerment.

The University has had, since 1994, a major centrally-funded programme to deliver student IT literacy. Passing through the programme is a requirement for all students in their first year of study. The programme is built around the notion of a

minimum IT competency expectation for all students, the "IT Baseline" (the IT Baseline is now shared with both the other universities in Glasgow). A series of routes enables students to achieve the baseline competences, and a needs analysis procedure (now on-line) advises students of the route appropriate to their level of IT competence. The routes vary from a 12-14 hour Beginners course (tutor-led) through a Standard course of 8 hours (available in taught and on-line modes) and a fast-track course consisting of a 2-hour session coupled with on-line topping-up of skills, to a one-off test for those who already possess the skills and merely need to demonstrate them. There is also a procedure, which allows those who already have proof of their skills or are receiving the skills through courses within their subject departments to be exempted from the course requirement. All who successfully pass through the programme receive a Certificate of Basic IT Competence, which is recorded on their academic transcript. About 5,200 students pass through the programme annually. The programme is run by the IT Education Unit, located in the Information Services area. The unit also offers a programme of non-compulsory courses beyond the baseline, focused on student tasks such as laying out a thesis, preparing a CV, delivering a PowerPoint presentation, or creating a web page. The IT Induction Programme is operated in close co-operation with subject departments, and is delivered for the majority of students in departmental computer clusters by research students from that or cognate subject areas. For a minority of students, individual registration is required, and central clusters are used for delivery. For post-graduate students, there are also courses offered by the University Computing Service, focused mainly on specific applications. The Computing Service directs its main training activity towards staff.

For the future, a number of developments are anticipated. After two years of development work, this year the IT Education Unit launched the on-line element of the student IT Induction Programme. This involves a series of integrated on-line applications: a needs analysis procedure which advises students of the most appropriate route for them through the programme; a linked registration system which allows students to sign on to an appropriate course; and on-line materials delivery system; and a three-stage system of on-line feedback questionnaires, one at the beginning of the course, one at the end, and a third four to six months after the course has been completed. Now that the Induction programme is running at its target level (all students in their first year of study – c. 5,200 per annum), further attention is now being focused on course provision beyond the IT Baseline. Whilst the Baseline programme is intended to prepare student to use IT effectively as students, consideration also needs to be given to preparing students for more advanced academic work, and for passage into employment. This may involve the development of further baselines or benchmarks, in which there will be more of a subject focus than with the IT Baseline programme. This work is being carried out during the present academic session. As mentioned above, the university is moving toward the adoption of a particular VLE to be made available to all students and staff, and when this choice has been made, IT Induction provision will evolve to ensure that students are prepared for confident VLE-usage.

The University of Glasgow is fully committed to maintaining its leading position as a provider, not only of student IT literacy, but of an IT environment in which students and staff can deploy the tools of the Information Age in the interests of learning. An IT guide issued to all students makes this point: "IT is an important tool which can be employed to make study more effective. For this reason a programme of courses offering general IT competence to all students has been developed since 1994. The courses making up the programme are open to all students of Glasgow University, and are free of change." (*IT for Effective Study*, 2001-2002 edition p. 21)

5.2. University of Gloucestershire

Cheltenham & Gloucester College of Higher Education (CGCHE), now the University of Gloucestershire, was formed in 1990. Located on three campuses in Cheltenham, the University will open a fourth new campus in Gloucester in 2002, responding to the need to widen access and participation in higher education in Gloucester. It supports over 9000 full-time and part-time students and approximately 1000 members of staff. Teaching faculties include Arts and Humanities, Education and Social Sciences, Environment and Leisure and the Gloucestershire Business School. The Uinversity offers a large variety of professional and vocational courses in areas such as Art and Design, Teacher Training, Management, Social Work and Community Studies. A number of modular undergraduate and postgraduate courses are also career orientated; they include Business Studies, Media Studies, Hospitality and Tourism, but more traditional subjects such as English and History are offered too. Of the diverse student population 80% originate from Gloucestershire and neighbouring counties, 25% are mature students, 5% are from ethnic minorities. The total population of international students is 280 (ca 3%).

The University's ICT skills provision is categorised as either programme/subject specific or generic. These categories are further divided into compulsory and voluntary. Programme specific compulsory and voluntary training consists of academic modules, which are available to all students irrespective of their final award. For example, the 'Learning Development' module, 'SF121', focuses on skills development relevant to the students' current academic and future professional careers. A further module, 'SF122', 'Transferable Skills', covers key C&IT skills necessary for the students' progression through their major and minor subject routes in levels two and three. This module is supported by a centrally produced workbook and must be successfully completed during level one. These skills based modules have been designed to introduce undergraduate students to some of the basic ICT skills necessary for the successful completion of

their academic study and address a range of skills, both subject specific and generic. Voluntary generic training includes credit bearing academic modules, externally certified awards including the ECDL and non-credit bearing skills training. Beyond these courses, a Skills Support Team operates within the Learning Technology Support Department to provide specific advice according to student requirements.

There is a commitment to maximising the use of ICT to support and enhance student learning. Institutional responsibility for student ICT induction resides with several University committees. An ICT Steering Group considers the ICT strategy for the whole institution, The Teaching, Learning and Assessment Committee is concerned with how ICT is applied and integrated to support learning. Faculty Academic Standards Committees approve changes to existing modules and new module additions; Field Boards evaluate modules, which are subject to internal and external review. The Faculty of Learning and Information Services, through the Department of Learning Technology Support leads generic ICT skills training for both students and staff, offering an information skills programme, as well as CLAIT and ECDL. The LIS Faculty Management Team plans change for the future, responds to feedback from Field Boards and recommends good practice. Specific policies related to ICT development include an ICT policy, which has been developed to use ICT to enhance and support the development of learning, teaching, research, administration, and management processes.

The University is witnessing rapid development of modules delivered using on-line methods. On-line learning will play an increasingly important role in the academic environment. In order to accomplish quality on-line training the development of on-line courses is under way. The changing student profile may result in the inclusion of more advanced and technically demanding ICT training sessions. Experience suggests that some students are arriving with more ICT experience and knowledge, which demands a continuous innovative adjustment of the ICT syllabus. Future directions include the incorporation of WebCT, the learning management system into the Learning Development modules. Through on-line training materials developments it is intended to integrate generic ICT training for staff and students. With regard to the important issue of 'graduateness', a project is in progress to develop student profiles for their skills development and participation in career management through the compilation of a personal development portfolio or 'personal profile'.

The University recognises student ICT as necessary graduate skill and Learning Technology Support promotes the benefit of acquiring a recognised ICT qualification, in order to provide evidence of competency. The notion of 'graduateness' deserves serious attention and there is pressure on graduates from employers to prove their transferable skills. The University recognises this and identifies and defines skills in module descriptors, indeed, the Teaching, Learning and Assessment Policy seeks to promote students' skills for lifelong learning and employability.

6. Conclusion

It seems clear that in terms of developmental patterns there is a growing maturity of consideration of student ICT literacy issues and provision. In strategic terms there is an acknowledgement that preparing students for effectiveness in the ICT-rich learning environment of twenty-first century higher education is a responsibility which institutions cannot ignore, and to which some institutional resource must be devoted. In organisational terms the vast majority of institutions have moved beyond a situation of piecemeal local provision into one where strategic initiatives at central or devolved level are leading to more comprehensive provision, whilst some institutions have reached a stage of consolidation in which a variety of structures is brought within a more holistic pattern. In terms of the way in which provision is perceived, there is increasing concern to give student ICT literacy provision a clear aim; whilst many concepts of ICT literacy are still application-focused, a growing number of programmes are based on a reflective model of appropriate usage of ICT tools to address study-related tasks.

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